

**WHAT IS CLAIMED IS:**

1. A substance for preventing, delaying the onset of or treating one or more than one autoimmune disease, the substance comprising a polynucleotide construct comprising a polynucleotide sequence encoding the pro-apoptotic protein BAX and encoding one or more than one autoantigen for the autoimmune disease.

2. Use of a polynucleotide construct comprising a polynucleotide sequence encoding the pro-apoptotic protein BAX and encoding one or more than one autoantigen for an autoimmune disease for the manufacture of a medicament for preventing, delaying the onset of or treating the one or more than one autoimmune disease.

3. Use of a polynucleotide construct comprising a polynucleotide sequence encoding the adenoviral protein E3-GP19k for the manufacture of a medicament for preventing, delaying the onset of or treating one or more than one autoimmune disease.

4. Use of a polynucleotide construct comprising a polynucleotide sequence encoding ABCL-2 for the manufacture of a medicament for preventing, delaying the onset of or treating one or more than one autoimmune disease.

5. Use according to any one of claims 2 to 4, where the medicament is manufactured in dosage units of between about 0.5 mg to about 5 mg.

6. Use according to any one of claims 2 to 4, where the medicament is manufactured in dosage units of between about 1 mg to about 4 mg.

7. Use according to any one of claims 2 to 4, where the medicament is manufactured in dosage units of between about 2.5 mg to about 3 mg.

8. Use according to any one of claims 2 to 4, where the medicament is manufactured in a form suitable for intramuscular administration.

9. Use according to any one of claims 2 to 4, where the medicament is manufactured in a form suitable for intravenous administration.

10. A method for preventing, delaying the onset of or treating an autoimmune disease in a patient comprising:

a) selecting a patient who is susceptible to developing the autoimmune disease, who is developing the autoimmune disease or who has the autoimmune disease; and

b) administering to the patient one or more than one dose of a polynucleotide construct comprising a polynucleotide sequence encoding the pro-apoptotic protein BAX and encoding one or more than one autoantigen for the autoimmune disease.

11. The method of claim 10, where the autoimmune disease is type I diabetes.

12. The method of claim 11, where selecting the patient comprises identifying in the patient the presence of anti-insulin or anti-GAD autoantibodies or both anti-insulin and anti-GAD autoantibodies.

5 13. The method of claim 11, where selecting the patient comprises identifying in the patient the presence of increasing hyperglycemia.

14. The method of claim 11, where selecting the patient comprises identifying in the patient the presence of glycosuria.

10 15. The method of claim 10, where selecting the patient comprises identifying in the patient the presence of a genetic predisposition to the autoimmune disease.

16. The method of claim 10, where the one or more than one dose is a plurality of doses.

17. The method of claim 10, where administering to the patient one or more than one dose comprises injecting the patient intramuscularly with the one or more than one dose.

15 18. The method of claim 10, further comprising, after administering, monitoring the patient for the development the autoimmune disease.

19. A method for preventing, delaying the onset of or treating an autoimmune disease in a patient comprising:

20 a) selecting a patient who is susceptible to developing the autoimmune disease, who is developing the autoimmune disease or who has the autoimmune disease; and

b) administering to the patient one or more than one dose of a polynucleotide construct comprising a polynucleotide sequence encoding the adenoviral protein E3-GP19k.

20. The method of claim 19, where the autoimmune disease is type I diabetes.

25 21. The method of claim 20, where selecting the patient comprises identifying in the patient the presence of anti-insulin or anti-GAD autoantibodies or both anti-insulin and anti-GAD autoantibodies.

22. The method of claim 20, where selecting the patient comprises identifying in the patient the presence of increasing hyperglycemia.

30 23. The method of claim 20, where selecting the patient comprises identifying in the patient the presence of glycosuria.

24. The method of claim 19, where selecting the patient comprises identifying in the patient the presence of a genetic predisposition to the autoimmune disease.

25. The method of claim 19, where the one or more than one dose is a plurality of doses.

26. The method of claim 19, where administering to the patient one or more than one dose comprises injecting the patient intramuscularly with the one or more than one dose.

5 27. The method of claim 19, further comprising, after administering, monitoring the patient for the development the autoimmune disease.

28. A method for preventing, delaying the onset of or treating an autoimmune disease in a patient comprising:

10 a) selecting a patient who is susceptible to developing the autoimmune disease, who is developing the autoimmune disease or who has the autoimmune disease; and

b) administering to the patient one or more than one dose of a polynucleotide construct comprising a polynucleotide sequence encoding  $\Delta$ BCL-2.

29. The method of claim 28, where the autoimmune disease is type I diabetes.

15 30. The method of claim 29, where selecting the patient comprises identifying in the patient the presence of anti-insulin or anti-GAD autoantibodies or both anti-insulin and anti-GAD autoantibodies.

31. The method of claim 29, where selecting the patient comprises identifying in the patient the presence of increasing hyperglycemia.

20 32. The method of claim 29, where selecting the patient comprises identifying in the patient the presence of glycosuria.

33. The method of claim 28, where selecting the patient comprises identifying in the patient the presence of a genetic predisposition to the autoimmune disease.

34. The method of claim 28, where the one or more than one dose is a plurality of doses.

25 35. The method of claim 28, where administering to the patient one or more than one dose comprises injecting the patient intramuscularly with the one or more than one dose.

36. The method of claim 28, further comprising, after administering, monitoring the patient for the development the autoimmune disease.

30 37. A method for preventing, delaying the onset of or treating an autoimmune disease in a patient comprising:

a) selecting a patient who is susceptible to developing the autoimmune disease, who is developing the autoimmune disease or who has the autoimmune disease; and

b) administering to the patient one or more than one dose of a polynucleotide construct comprising a polynucleotide sequence encoding the pro-apoptotic protein BAX and encoding one or more than one autoantigen for the autoimmune disease, or a polynucleotide construct comprising a polynucleotide sequence encoding the adenoviral protein E3-GP19k, or a polynucleotide construct comprising a polynucleotide sequence encoding  $\Delta$ BCL-2, or a combination of the preceding polynucleotide constructs.

38. The method of claim 37, where the autoimmune disease is type I diabetes.

39. The method of claim 38, where selecting the patient comprises identifying in the patient the presence of anti-insulin or anti-GAD autoantibodies or both anti-insulin and anti-GAD autoantibodies.

40. The method of claim 38, where selecting the patient comprises identifying in the patient the presence of increasing hyperglycemia.

41. The method of claim 38, where selecting the patient comprises identifying in the patient the presence of glycosuria.

42. The method of claim 37, where selecting the patient comprises identifying in the patient the presence of a genetic predisposition to the autoimmune disease.

43. The method of claim 37, where the one or more than one dose is a plurality of doses.

44. The method of claim 37, where administering to the patient one or more than one dose comprises injecting the patient intramuscularly with the one or more than one dose.

45. The method of claim 37, further comprising, after administering, monitoring the patient for the development the autoimmune disease.